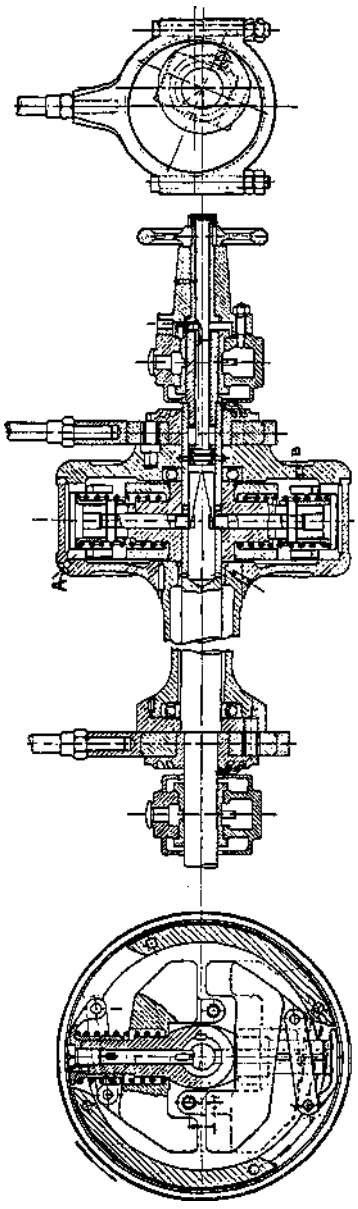

Fig 25.—Robey Crank-shaft Governor

increases, necessitating a greater alteration in speed for any given movement of the collar. Increasing the weight of the balls would not help, obviously. There are many types of spring governor which may be made as isochronous as desired, but have little power, but we are here concerned with governors intended to be used to actuate valves and gear offering considerable resistance to movement.

There are innumerable designs of loaded governor, some of which are of doubtful merits. One commonly used, fig. 23, has the arms, which are of bell-crank form, pivoted on the central weight, the inner ends being provided with rollers moving

along an inclined path. In this case also the path of the balls is approximately para-bolic, but the power of such a governor is small, as the weight has little movement and not much work can be stored in it.

Although isochronism is easily obtained, it is at the expense of stability, and too high a degree of sensitiveness is inadvis-able. It is useless to design a governor to work within, or even to approach, the cyclic irregularity of the engine itself or the governor will be continuously on the move.

The phenomenon known as " hunting ", which consists of a rhythmic variation of speed, may occur. The governor moves throughout its range at each change, and steam is alternately fully admitted and completely shut off. Thus racing is fol-lowed by undue retardation, but

hunting may exist in all degrees. In order to combine stability with a reasonably high sensitiveness, dashpots are often added, in which fluid friction is used to prevent over-hastiness in responding to trivial disturbances, whilst permitting a ready and definite response to even a slight permanent variation of load.

An ingenious method of obtaining practically perfect isochronism combined with stability, a condition useful, for example, in engines driving cotton-spinning machinery, is by employing two governors, both having a fairly high degree of stability. One is large and powerful, and actuates the regulating mechanism direct. The supplementary governor has two